

INCH-POUND  
MIL-R-83726/19H  
6 January 2016  
SUPERSEDING  
MIL-R-83726/19G  
15 June 2002

DETAIL SPECIFICATION SHEET

RELAYS, HYBRID, TIME DELAY (ON OPERATE), TRACK MOUNTED,  
TYPE I, CLASS B, 10 AMPERES, 2PDT, HERMETICALLY SEALED,  
FIXED TIME, 0.1 TO 300 SECONDS

Inactive for new design after 23 June 1995.  
No superseding document.

This specification is approved for use by all Departments  
and Agencies of the Department of Defense.

The requirements for acquiring the relay described herein shall  
consist of this specification and [MIL-PRF-83726](#).

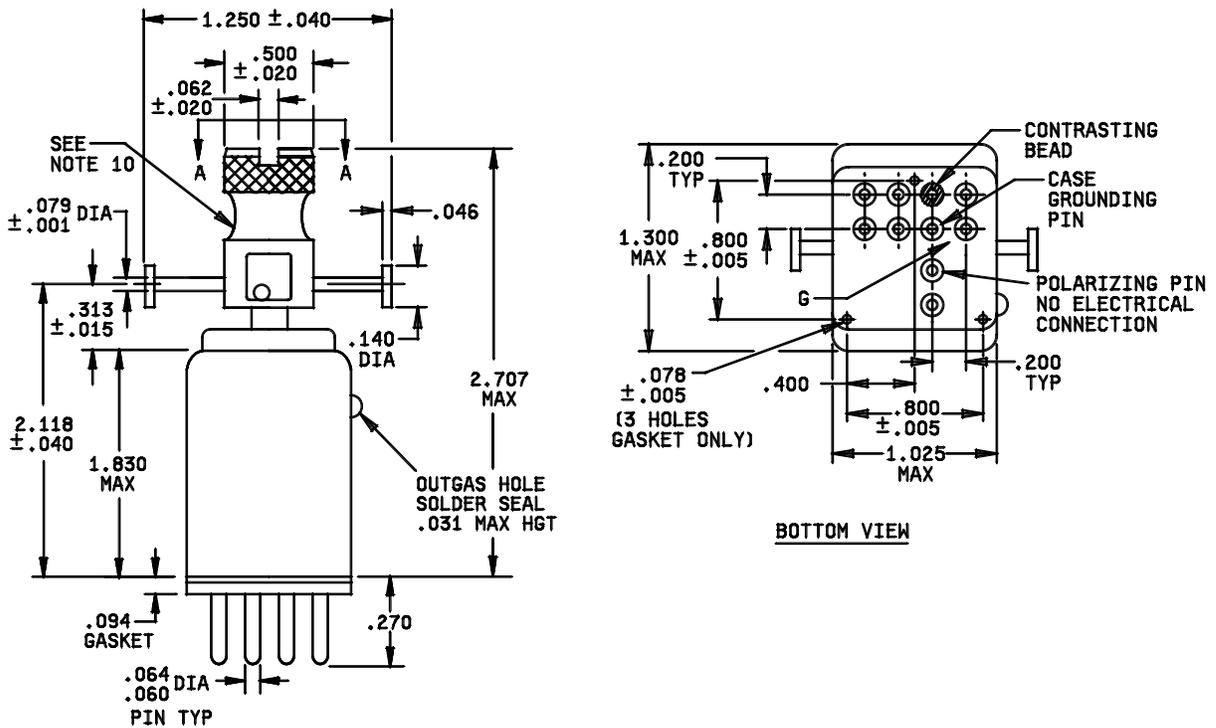
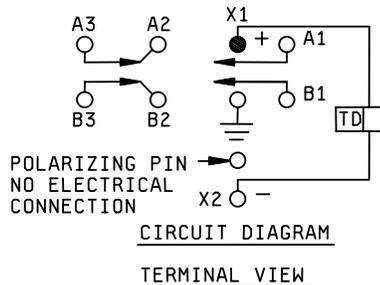
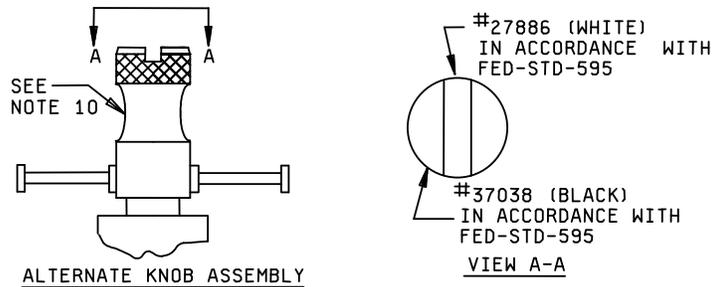


FIGURE 1. Dimensions and configuration.



MIL-R-83726/19H

Inches	mm
.001	0.03
.005	0.13
.015	0.38
.031	0.79
.040	1.02
.046	1.17
.060	1.52
.064	1.63
.078	1.98
.079	2.01
.094	2.39
.140	3.56
.200	5.08
.270	6.86
.313	7.95
.400	10.16
.800	20.32
1.025	26.04
1.250	31.75
2.118	53.80
2.707	68.76



NOTES:

1. Dimensions are in inches.
2. Unless otherwise specified, tolerance is  $\pm 0.010$  (0.25 mm).
3. Metric equivalents are given for general information only.
4. Terminal numbers shall not appear on the relay header. There shall be a legible circuit diagram on the relay which identifies each terminal location specified.
5. For mounting track, see [MIL-PRF-12883/49](#). For bracket and socket assembly, see [MIL-PRF-12883/51](#).
6. Gasket material: Methylvinyl silicone; shore hardness A40.
7. Terminal plating: Shall provide the operational, environmental, and interface characteristics to provide a reliable interconnect to gold plated contacts. Terminals shall be gold plated. One system for gold plating that may be used is [ASTM B488](#), type 3, class 1.25 with a nickel underplate of 50 to 150 microninches thick. The gold plating system shall enable the product to meet the performance requirements of this specification and shall be approved by the qualifying activity.
8. Enclosure finish color shall be in accordance with [FED-STD-595](#), blue 35240.
9. Coil suppression: Back EMF 42 V dc maximum.
10. Knob and post shall be nickel plated (100 microninches thick minimum), 303 stainless steel.

FIGURE 1. Dimensions and configuration - Continued.

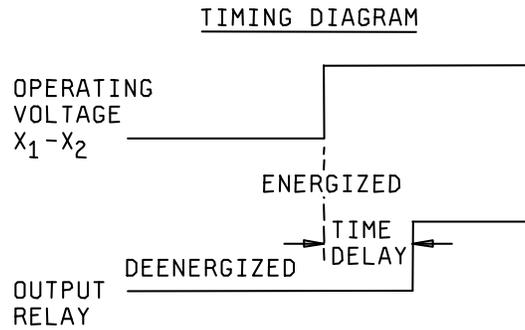


FIGURE 1. Dimensions and configuration - Continued.

TABLE I. Dash numbers and time delay characteristics.

Dash number <u>1/</u> <u>2/</u>	Time delay (seconds) $\pm 10\%$ <u>3/</u> <u>4/</u>
-1000	0.1
-1001	1.0
-5001	5.0
-1602	16.0
-6002	60.0
-1803	180.0
-3003	300.0

- 1/ Additional time delay relays within the 0.1- to 300-second delay range are available. To establish Part or Identifying numbers (PIN's) not listed in table I (see "PIN" herein).
- 2/ PIN's having a suffix letter A following the dash number impose more stringent EMI requirements than PIN's with the suffix letter W. For Government logistical support the suffixed PIN's will be supplied (see "PIN" herein).
- 3/ Ten percent of the nominal value under all combinations of input voltage and environmental extremes.
- 4/ Add 10 milliseconds to the  $\pm 10$  percent tolerance for the 0.1- to 1.0-second range.

REQUIREMENTS:

Contact data:

Configuration: 2PDT.

Life/load ratings: See [table II](#).

MIL-R-83726/19H

TABLE II. Life load ratings (relay case grounded).

Type of load	Life (cycles)	Amperes	
		28 V dc	115/200 1 and 3 phase 400 Hz
Resistive	100,000	10	10
Inductive	20,000	8	8
Motor	100,000	4	4
Lamp	100,000	2	2
Mechanical life (reduced current)	400,000	2.5	2.5

Contact voltage drop:

Initial: 0.150 volt.

After life tests: 0.175 volt.

Intermediate current: Applicable in accordance with [MIL-PRF-83536](#).

Contact bounce: 1 millisecond (maximum).

Overload:

DC: 40 amperes.

AC: 60 amperes.

Rupture: 1/

DC: 50 amperes.

AC: 80 amperes.

Input data:

Duty rating: Continuous.

Maximum voltage (over temperature range): 30 V dc.

Rated voltage (over temperature range): 28 V dc.

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1/ Not applicable if time current relay characteristics at 25°C are required, or if the [MIL-PRF-83536/9, /10, /11](#) relay being used is qualified to [MIL-PRF-83536](#).

MIL-R-83726/19H

Minimum voltage (over temperature range): 20 V dc.

Minimum voltage high-temperature test: 20 V dc.

Minimum voltage (continuous current tests): 20 V dc.

Maximum coil current at 25°C: 0.150 ampere.

Operate time: 25 milliseconds (maximum).

Recycle time: 50 milliseconds maximum (over the total temperature range and with both minimum and maximum input voltages).

Electrical data:

Insulation resistance at 500 V dc: 2/

Initial: 100 megohms (minimum).

After life or environmental tests: 100 megohms (minimum).

Dielectric strength (sea level): 2/

	Initial	After life tests
Coil to case. <u>3/</u>	1,050 V rms	1,050 V rms
All other points. <u>4/</u>	1,250 V rms	1,250 V rms

Dielectric strength (altitude)  
(80,000 feet): 2/ 5/

	Initial	After life tests
Coil to case. <u>3/</u>	350 V rms	350 V rms
All other points. <u>4/</u>	350 V rms	350 V rms

Transients (at terminals X1 and X2):

Transient voltage limits (input): In accordance with MIL-STD-461 (methods CS101, CS114, RS101, and RS103) for PIN's with a suffix letter W. For PIN's with a suffix letter A, the same limits apply except that the field intensity limits for RS103 are as specified in table III. Susceptibility testing shall not cause the relay to change state nor affect the timing interval beyond allowable tolerance limits.

2/ Terminals X1 and X2 are connected together during this test.

3/ Leakage current is limited to 50 microamperes.

4/ Leakage current is limited to 25 microamperes.

5/ Relay is not installed in its bracket and socket assembly (MIL-PRF-12883/51-004).

TABLE III. RS103 levels for suffix letter A PIN's.

Frequency	RS103 level (volt/meter)
14 kHz to 200 MHz	20
200 MHz to 450 MHz	65
450 MHz to 1 GHz	20
1GHz to 12 GHz	100

Transient voltage limits (output): In accordance with [MIL-STD-461](#) (methods CE106 and RE103), voltage spikes generated by time delay relays shall not exceed 42 volts during the following time periods starting at the instant of opening of the relay coil circuit:

PIN's with a suffix letter W: 50 microseconds.

PIN's with a suffix letter A: 500 microseconds.

Monitoring of spike voltages shall be by a device (such as a memory type oscilloscope) that can detect, measure, display, and record 0.25 to 1000 volts over the applicable time durations specified herein. Switches used to control the time delay relays during voltage-spike measurements shall not be EMI suppressed.

Time current relay characteristics at 25°C: [6/](#) Relays shall sustain five applications (make and carry only) of power concurrently on adjacent poles at each of five different current levels for the time durations shown in table IV. Separate relays shall be tested at 28 V dc and 115/200 V ac, 400 Hz, 3 phase. Cooling time between successive applications shall be 30 minutes. The test shall be performed on both normally open and normally closed contacts of each relay. There shall be no failures or evidence of welding or sticking, and relays shall pass contact voltage drop at conclusion.

TABLE IV. Time-current relay characteristics at 25°C.

1	15 A	1 hour
2	50 A	5.0 seconds
3	100 A	1.2 seconds
4	250 A	0.2 second
5	350 A	0.1 second

CAUTION: Compare with time-current characteristics of associated circuit protective device.

Environmental data (with relay installed in bracket and socket assembly M12883/50 and secured in mounting track M12883/49.

Temperature range (operating): -70°C to +125°C.

Maximum altitude rating: 80,000 feet.

[6/](#) Not applicable if the [MIL-PRF-83536/9](#), [/10](#), [/11](#) relay being used is qualified to the time current relay characteristics at 25°C requirements of [MIL-PRF-83536](#).

MIL-R-83726/19H

Shock G level: 50 g's.

Duration: 10 milliseconds.

Maximum duration contact opening: 10 microsecond.

Maximum duration contact closing: 1 microsecond.

Vibration (sinusoidal):

G level: 30 g's.

Frequency range: 10 Hz to 3,000 Hz.

Vibration (random): Applicable in accordance with [MIL-STD-202](#), method 214, test condition 1B.

Power spectral density: 0.4 g<sup>2</sup>/Hz.

Frequency range: 50 Hz to 2,000 Hz.

Duration: 15 minutes each plane.

Acceleration: 15 g's.

Seal: Applicable to nonhermetically-sealed relays and hermetically-sealed (potted) relays.

Physical data:

Dimensions and configuration: See [figure 1](#).

Weight: 0.24 pound (.11 kilogram) maximum.

Knob strength: The rod to knob junction shall be capable of resisting an axial pull of 35 pounds without degradation.

Marking: See [MIL-PRF-83726](#). In addition, relays shall be marked with the ESDS identifier as specified in [MIL-STD-1285](#).

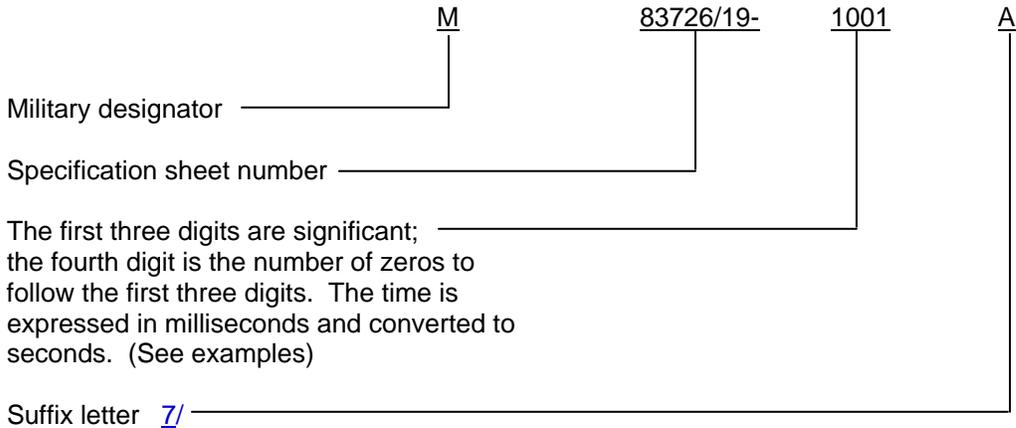
ESDS protection program: The manufacturer shall establish and maintain an ESD control program in accordance with [MIL-STD-1686](#) for mission critical equipment. Evidence of such compliance shall be verified by the qualifying activity of this specification as a prerequisite for qualification and continued qualification. This program shall be documented by an ESD control plan that must be under document control. As a minimum, this plan must address the identification of ESDS sub-components and preservation, packaging, and quality assurance. A model ESD control program is available from the qualifying activity and may be used as a guideline. Further guidance for ESD control is available from the EDS/ESD Association and the Electronics Industry Association (EIA). This requirement is applicable to all manufacturers who handle ESDS component parts and materials in the relay manufacturing or testing process. This requirement is not limited to manufacturers qualifying ESDS end items.

ESDS verification: As a part of qualification or qualification after redesign, ESD testing shall be done in accordance with method 3015 of [MIL-STD-883](#) modified to test at 16,000 volts. Testing at lower voltage levels is not required. This testing shall be accomplished as part of the group III for qualification inspection and as part of the group C inspection.

MIL-R-83726/19H

ESDS preservation and packaging: Relays shall be preserved and packaged in such a manner as to ensure that the integrity of ESD sensitive relays is not diminished. ESD sensitive relays shall be preserved and packaged in accordance with the requirements of [MIL-STD-1686](#).

PIN: Consists of the prefix M83726/19-, a four-digit dash number (expressed in milliseconds), and a suffix letter (indicating the extent of EMI requirements) as follows:



Examples:

M83726/19-1000W - 100 millisecond time delay, with less stringent EMI requirements.

M83726/19-1001A - 1 second time delay, with more stringent EMI requirements.

Quality assurance provisions: Group B and group C testing are not required. The manufacturer shall notify the qualifying activity in the event of any design or construction changes, and shall impose additional testing requirements as necessary.

The Qualified Products List (QPL) associated with this inactive for new design specification will be maintained until acquisition of the product is no longer required, whereupon the specification and the QPL will be canceled.

7/ Any relays numbered prior to the date of this specification with a suffix indication shall be considered interchangeable (store and issue) with the W for relays with less stringent EMI requirements (Y,X) or A for relays with more stringent EMI requirements (B,C).

NOTE: As of 15 June 1999, [MIL-PRF-83726](#) no longer specifies Quality Levels, but existing order configurations may still include them. Relays with a "W" quality level indicator at the end are interchangeable with relays without a quality level letter.

Referenced documents. In addition to [MIL-PRF-83726](#), this document references the following:

<a href="#">MIL-DTL-12883/49</a>	<a href="#">MIL-DTL-12883/51</a>	<a href="#">MIL-PRF-83536/9</a>	<a href="#">MIL-PRF-83536/10</a>
<a href="#">MIL-PRF-83536/11</a>	<a href="#">MIL-STD-202-214</a>	<a href="#">MIL-STD-461</a>	<a href="#">MIL-STD-883</a>
<a href="#">MIL-STD-1285</a>	<a href="#">MIL-STD-1686</a>	<a href="#">FED-STD-595/27886</a>	<a href="#">FED-STD-595/35240</a>
<a href="#">FED-STD-595/37038</a>	<a href="#">ASTM-B488</a>		

MIL-R-83726/19H

Changes from previous issue. The margins of this specification are marked with vertical lines to indicate where changes from previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the previous issue.

Custodians:

Navy - EC  
Air Force -85  
DLA - CC

Preparing activity:

DLA - CC

Review activity:

Air Force 99

(Project 5945-2016-009)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.dla.mil>.